



U.S. Patent Application Serial No. 10/500,464
Reply to OA dated September 7, 2006

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Canceled).

Claim 2 (Previously Presented): A heat sink for a semiconductor device, comprising:
a base having a first surface on which a plurality of heat-radiating fins are arranged, and a second surface arranged to contact a semiconductor device directly; and

a heat spreader provided on the second surface of the base arranged such that the heat spreader does not contact a semiconductor device directly when a semiconductor device is in contact with the second surface;

wherein the heat spreader comprises an opening which covers at least a periphery of the semiconductor device bonded directly to the second surface of the base.

Claim 3 (Previously Presented): A heat sink for a semiconductor device, comprising:
a base having a first surface on which a plurality of heat-radiating fins are arranged, and a second surface arranged to contact a semiconductor device directly; and

a heat spreader provided on the second surface of the base arranged such that the heat spreader does not contact a semiconductor device directly when a semiconductor device is in contact with the second surface;

wherein the heat spreader comprises a plurality of heat spreader pieces arranged on the second surface of the base to encircle a periphery of the semiconductor device, the heat spreader pieces being embedded in the base so that the heat spreader pieces are flush with a back surface of the base.

Claim 4. (Currently Amended): The A heat sink according to claim 1 for a semiconductor device, comprising

a base formed of a metallic material having a first surface on which a plurality of heat-radiating fins are arranged, and a second surface arranged to contact a semiconductor device directly;
and

a heat spreader formed of a metallic material which has a heat conductivity higher than that of the metallic material of the base provided on the second surface of the base arranged such that the heat spreader does not contact a semiconductor device directly when a semiconductor device is in contact with the second surface;

wherein the heat spreader comprises a pair of heat spreader pieces each of which is embedded in the base to oppose one of side surfaces of the semiconductor device, each heat spreader piece having a depth that is almost the same as a depth of the base and having tapered portions along side surfaces of the heat spreader piece.

Claim 5 (Original): A semiconductor device comprising a heat sink, the heat sink comprising:

a base having a first surface on which a plurality of heat-radiating fins are arranged, and a second surface which contacts the semiconductor device directly; and

a heat spreader provided on the second surface of the base so that the heat spreader does not contact the semiconductor device directly.

Claim 6 (Previously Presented): A semiconductor device comprising a heat sink, the heat sink comprising:

a base having a first surface on which a plurality of heat-radiating fins are arranged, and a second surface which contacts the semiconductor device directly; and

a heat spreader provided on the second surface of the base so that the heat spreader does not contact the semiconductor device directly,

wherein the heat spreader comprises an opening which covers at least a periphery of the semiconductor device bonded directly to the second surface of the base.

Claim 7 (Previously Presented): A semiconductor device comprising a heat sink, the heat sink comprising:

a base having a first surface on which a plurality of heat-radiating fins are arranged, and a second surface which contacts the semiconductor device directly; and

a heat spreader provided on the second surface of the base so that the heat spreader does not contact the semiconductor device directly,

wherein the heat spreader comprises a plurality of heat spreader pieces arranged on the second surface of the base to encircle a periphery of the semiconductor device, the heat spreader pieces being embedded in the base so that the heat spreader pieces are flush with a back surface of the base.

Claim 8 (Previously Presented): A semiconductor device comprising a heat sink, the heat sink comprising:

a base having a first surface on which a plurality of heat-radiating fins are arranged, and a second surface which contacts the semiconductor device directly; and

a heat spreader provided on the second surface of the base so that the heat spreader does not contact the semiconductor device directly,

wherein the heat spreader comprises a pair of heat spreader pieces each of which is embedded in the base to oppose one of side surfaces of the semiconductor device, each heat spreader piece having a depth that is almost the same as a depth of the base and having tapered portions along side surfaces of the heat spreader piece.